

WHAT IS CLAIMED IS:

1. A mobile terminal apparatus comprising: a transmission unit; a reception unit for receiving signals which are transmitted from a plurality of signal generating sources; and a positioning unit for performing a position detecting operation by way of a positioning method based upon propagation delay time of said received signals, wherein:

accuracy of said position detecting operation by said positioning unit is variably set; and

said positioning unit executes the position detecting operation by way of a positioning method in accordance with said set accuracy.

2. A mobile terminal apparatus as claimed in claim 1 wherein:

said mobile terminal apparatus is employed so as to provide a service made based upon said detected position; and

the accuracy of said position detecting operation is set in connection with said provided service.

3. A mobile terminal apparatus as claimed in claim 2 wherein:

said transmission unit transmits a request of providing said service to a service provider's server;

said positioning unit executes the position detecting operation in response to an instruction issued from said service provider's server, which is

2022220-48562007

received by said reception unit;

said transmission unit transmits the result of said position detecting operation to said service provider's server; and

said reception unit receives information related to said requested service from said service provider's server.

4. A mobile terminal apparatus as claimed in claim 1 wherein:

said positioning unit includes a propagation delay amount measurement unit for measuring propagation delay of said plurality of received signals;

information used to determine said positioning method contains a total number of the signal generating sources which are used to perform the position detecting operation; and

said propagation delay measurement unit measures propagation delay of received signals, the total number of which is equal to a total number of said signal generating sources which are used to execute said position detecting operation.

5. A mobile terminal apparatus as claimed in claim 1 wherein:

said positioning unit includes a propagation delay measurement unit for measuring propagation delay of said plurality of received signals;

information used to determine said positioning method contains information related to a

10079584-022202

time duration used to measure the signals which are transmitted from said plurality of signal generating sources; and

said propagation delay measurement unit measures propagation delay of the signals transmitted from said plurality of signal generating sources for a time period corresponding to said time duration.

6. A mobile terminal apparatus as claimed in claim 1 wherein:

said positioning unit includes a position calculation unit for executing a position calculating operation by employing propagation delay time of said received signals;

information used to determine said positioning method contains a total number of predicted positions;

said position calculation unit calculates the predicted positions, the total number of which is equal to said total number contained in the information used to determine the positioning method, by employing the signals transmitted from said plurality of signal generating sources; and

said position calculation unit performs the position calculating operation by employing said plurality of predicted positions.

7. A mobile terminal apparatus as claimed in claim 1 wherein:

information used to determine said

10079584.022202

positioning method contains criteria for judging a completion of a position calculating operation; and

said positioning unit judges as to whether or not said position detecting operation is continuously carried out by checking as to whether or not said position calculating completion criteria can be satisfied.

8. A mobile terminal apparatus as claimed in claim 1 wherein:

said mobile terminal apparatus displays the result of said position detecting operation on a map; and

accuracy of said position detecting operation is set in response to a reduced scale of said map.

9. A mobile terminal apparatus as claimed in claim 1 wherein:

in the case that an instruction of the position detecting operation is inputted, said positioning unit judges as to whether or not the position detecting operation is again carried out in accordance with a past position detecting operation;

when the position detecting operation need to be again carried out, the positioning unit performs the position detecting operation; and

when the position detecting operation need not to be again carried out, the positioning unit substitutes the result of said past position detecting operation for a result of a position detecting

2022220-4856200T

operation in response to said instruction of the position detecting operation.

10. A mobile terminal apparatus as claimed in claim 1 wherein:

said positioning method is set in accordance with a condition of said mobile terminal apparatus.

11. A mobile terminal apparatus as claimed in claim 1 wherein:

said mobile terminal apparatus includes a table which describes a correspondence relationship between the accuracy of said position detecting operations and the information used to determine said positioning methods, and determines a positioning method based upon notified accuracy of the position detecting operation.

12. A service provider's server apparatus for providing plural sorts of services by using information related to a position of a detected mobile terminal, wherein:

said service provider's server apparatus is comprised of a table which describes a correspondence relationship between said plural sorts of services and said accuracy of the position detecting operations;

in the case that a request of providing a service is received, said service provider's server apparatus retrieves accuracy of a position detecting operation corresponding to said requested services from said table;

20220718561007

said service provider's server apparatus transmits such an instruction for performing the position detecting operation in said retrieved accuracy to said mobile terminal;

said service provider's server apparatus receives the result of said position detecting operation; and

said service provider's server apparatus generates service information related to said required service based upon the result of said position detecting operation and outputs said generated service information.

13. A service provider's server apparatus as claimed in claim 12 wherein:

the accuracy of the position detecting operation of said table is described as any one of a total number of signal generating sources used to perform the position detecting operation, a time duration used to measure the signals transmitted from said plurality of signal generating sources, a total number of predicted positions to be utilized, and position calculation completion criteria; and

said predicted positions correspond to a plurality of positions which are calculated by employing the signals transmitted from said plurality of signal generating sources, and are utilized so as to perform the position detecting operation based upon said plurality of predicted positions.

10079584.022202

14. A service providing method for providing plural sorts of services by utilizing information related to a position of a detected mobile terminal, comprising:

a step for receiving a request of providing a service so as to set accuracy of detecting the position of said mobile terminal in response to said requested service;

a step for transmitting such an instruction for performing the position detecting operation in said set accuracy to said mobile terminal;

a step for receiving the result of said position detecting operation; and

a step for generating service information related to said required service based upon the result of said position detecting operation and for outputting said generated service information.

20220408 10:56:00